

Appl. No. : 09/771,043  
Filed : January 26, 2001

**REMARKS**

Claims 1-3, 5-6, 8-9, and 11-12 have been cancelled. Claims 4 and 7 have been amended. Claims 4, 7, and 10 are now pending in this application. Support for the amendments is found in the existing claims and the specification as discussed below. Accordingly, the amendments do not constitute the addition of new matter. Applicant respectfully requests the entry of the amendments and reconsideration of the application in view of the amendments and the following remarks.

**Rejection under 35 U.S.C. § 102(b)**

Claims 4-6 and 10-12 are rejected under 35 U.S.C. § 102(b) as anticipated by Lichtenwalter (U.S. 5,683,875).

The Examiner states that Lichtenwalter teaches a polycarbonate or polypropylene substrate to which oligonucleotides may be attached and that they teach attaching at the 3' or 5' end with oligonucleotides of range 7-25 base pairs.

Lichtenwalter does not teach all of the elements of the invention as presently claimed. Both of claims 4 and 7 have been amended to recite that the contact portion between the substrate and the nucleic acid is irradiated with an electromagnetic wave and that the polymer is a polymer of a monomer having a base which is selected from the group consisting of thymine, a thymine derivative, uracil and a uracil derivative, with an average degree of polymerization of the polymer being not less than 3 and not more than 100. Support for the amendment to claim 4 is found in claims 5-7 and the description on page 8, lines 9-10 of the present specification. Support for the amendments to claim 7 is found in cancelled claims 8-9 and the description at page 8, lines 9-10 of the present specification. The addition of "polystyrene" to claims 4 and 7 is supported by the specification at page 10, line 14.

Although Lichtenwalter mentions attachment using photoactivatable groups (col. 9, lines 59-61), Lichtenwalter does not teach any specific photoactivatable group and does not teach the polymer of monomers having a base which is thymine, a thymine derivative, uracil or a uracil derivative with a degree of polymerization of 3-100 which is claimed by Applicants.

In view of Applicants' amendments, withdrawal of the above ground of rejection is respectfully requested.

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**Rejection under 35 U.S.C. § 102(e)**

Claims 4-12 are rejected under 35 U.S.C. § 102(e) as anticipated by Guire, et al. (U.S. Patent No. 6,506,895).

Guire, et al. teach a probe array in which a nucleic acid is bound to a specified polymer formed from monomers having a polymerizable vinyl group (see claim 2, for example). However, Guire, et al. do not teach all of the elements of the invention as presently claimed. Support for the claim amendments is described above. Guire, et al. are silent regarding a polymer which is a polymer of a monomer having a base selected from the group consisting of thymine, a thymine derivative, uracil and a uracil derivative, with an average degree of polymerization of the polymer being not less than 3 and not more than 100. While Guire, et al. teach the use of a photoactivatable group, the preferred photoactivatable groups disclosed by Guire, et al. are photoreactive aryl ketones and azides. Thus, Guire, et al. do not teach the photoactivatable group of Applicants' claims which is a polymer of monomers with a base selected from the group consisting of uracil, thymine, uracil derivative or thymine derivative polymer.

In view of Applicants' amendments, withdrawal of this ground of rejection is respectfully requested.

**The present claims are not obvious under 35 U.S.C. § 103(a)**

Furthermore, Applicants assert that the present claims are not obvious over Guire, et al. In support of this assertion, Applicants present evidence of unexpected results as shown by the attached Kimura Declaration.

The Kimura Declaration provides a comparison between Example 3 of U.S. Patent No. 6,506,895 to Guire, et al and the presently claimed invention. The Kimura Declaration shows that when hybridization and stripping are repeated, that the signal obtained by using the polymer-bound nucleic acid of Guire, et al. decreases with each successive hybridization. However, the signal obtained using the specified polymer according to the present invention remained detectable and proportionately accurate. Thus, in the substrate of the present invention, the nucleic acid is stably immobilized, which enables the reuse of the substrate. This is an industrially valuable characteristic.

This advantage was not expected from Guire, et al. In view of the evidence of unexpected results discussed above, the present claims are patentable over Guire, et al.

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CONCLUSION

In view of Applicants' amendments to the claims and the foregoing Remarks, it is respectfully submitted that the present application is in condition for allowance. Should the Examiner have any remaining concerns which might prevent the prompt allowance of the application, the Examiner is respectfully invited to contact the undersigned at the telephone number appearing below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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Dated: Nov. 3, 2003

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